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PRE-OPERATIONAL SNOW SAMPLING SURVEY in the vicinity of MINNOVA INC. SCHREIBER, ONTARIO 1987.

Ontario
Ministry of the Environment

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1987

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INTRODUCTION

Minnova Inc. is developing a base metal mine and concentrator complex near Winston Lake. This project is adjacent to the former Zenmac Metal Mines Limited, and is located about 20 km (kilometres) northwest of Schreiber, Ontario. The mine, when in full production in the winter of 1988, will process about 1000 tonnes of ore daily. The zinc-copper ore body contains about 16 percent zinc, 1 percent copper and minor showings of silver and gold. Concentrates will be hauled by road to a transhipment point on the CPR rail line near Schreiber.

The discharge of air pollutants from the Minnova Inc. operation is a potential concern. To obtain background data before the scheduled start-up of the project, a pre-operational snow sampling survey was undertaken in February, 1987.

METHODS

Single samples of snow were collected on February 18, 1987 from 10 sites near the ore concentrator (Figure 1) and from two control sites remote from the study area. Core samples of the complete snow profile were obtained following standard Ministry procedures.[1] Snow meltwater samples were submitted to the Ministry's Thunder Bay laboratory for determination of cadmium, copper, iron, lead, mercury, zinc, solids (dissolved, suspended and total), conductivity and pH. Analysis of silver was performed at the Ministry's Toronto laboratory. These parameters were chosen as indicators of possible contamination from the mining operations.

Contaminant guidelines developed by the Ministry for snow are used in this report. Their exceedence suggests that contamination may be present, but does not necessarily imply adverse effects.

RESULTS

Results from the snow survey are summarized in Table 1. Most parameters were within expected background ranges and were typical of snow in areas remote from pollution sources. The guidelines for copper, lead and zinc were marginally exceeded at site 4, probably as a result of construction activities at the mine site. Levels of these same metals at site 6 were also slightly higher than background values. Sites 4 and 6 are both located near the construction area around the concentrator plant.

SUMMARY

A pre-operational survey was conducted in February, 1987 at the Minnova Inc. base metal mine near Schreiber. The study found that levels of most potential contaminants in snow meltwater were within normal background ranges. Three marginal guideline exceedences were attributed to construction activities and vehicular traffic in the area of the concentrator. The data acquired from this survey will be used as a benchmark against which results during normal mining operations will be compared. Further pre-operational studies comprising vegetation, soil sampling and a moss exposure experiment are scheduled for the summer of 1987.

REFERENCE

1. Ontario Ministry of the Environment, 1983. Field investigation procedures manual. Phytotoxicology Section, Air Resources Branch.

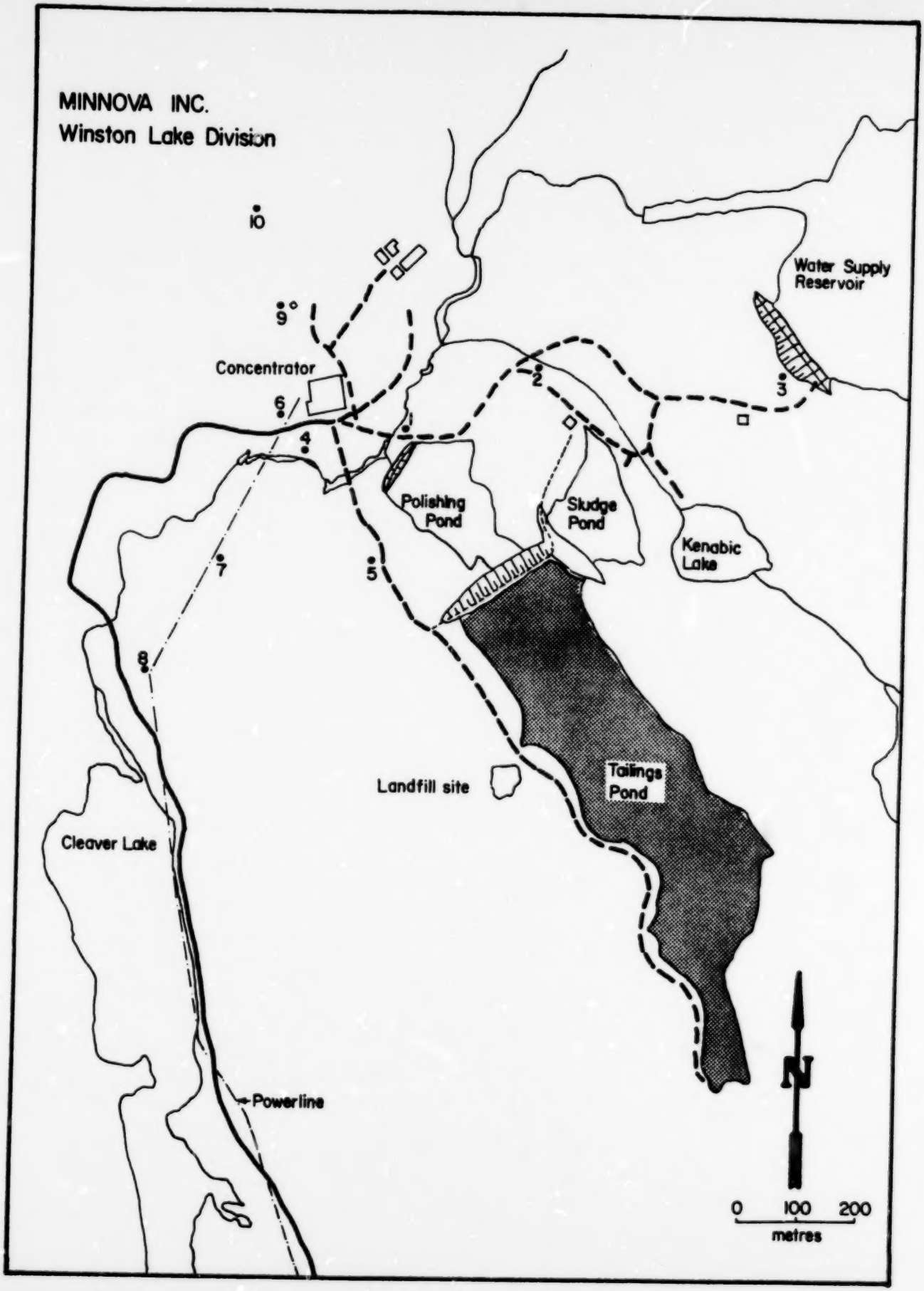

Figure I. Snow sampling sites, Winston Lake mine, February 18, 1987.

TABLE 1. Levels of cadmium, copper, iron, lead, mercury, silver, zinc (µg/ℓ), solids (mg/ℓ), conductivity (µmhos/cm) and pH in meltwater from snow collected in the vicinity of Minnova Inc. near Schreiber, Ontario, February 18, 1987.

Site	Cd	Cu	Fe	Pb	Hg	Ag	Zn	Solids			Conductivity	pH
								Dissolved	Suspended	Total		
1[a]	<0.5	4	81	7	<0.03	<0.2	13	1	3	4	10	4.7
2[a]	<0.5	2	68	6	<0.03	<0.2	4	0	4	4	9	5.0
3[a]	<0.5	2	120	5	<0.03	<0.2	6	2	3	5	10	5.2
4[a]	0.5	89	420	74	0.05	<0.2	340	0	5	5	10	4.8
5[a]	<0.5	3	56	4	0.04	<0.2	9	0	3	3	12	4.6
6[a]	<0.5	12	230	12	<0.03	<0.2	36	1	9	10	11	4.8
7	<0.5	5	66	6	<0.03	<.02	13	0	3	3	14	4.6
8	<0.5	3	90	5	<0.03	<0.2	7	1	4	5	16	4.6
9[a]	<0.5	6	110	7	<0.03	<0.2	22	2	3	5	11	4.7
10[a]	<0.5	3	57	5	<0.03	<0.2	4	2	3	5	11	4.6
Controls	<0.5	2	98	<3	<0.03	<0.2	4	2	6	8	15	4.8
Guidelines	3	60	700	70	<0.10		300		30		60	

[a]Sites located on company property.

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